

WHAT IS CLAIMED

1. A carbon media for storage of hydrogen,
characterised in that it comprises a micro-domain graphitic
materials which have been produced by decomposition of hydrocarbons in a
5 reaction chamber connected to a plasma generator in which the hydrocarbons
are subjected to a first decomposition step, where the hydrocarbon is fed into
the decomposition chamber in the vicinity of the plasma arc zone and mixed
with the plasma gas, and where the process parameters are adjusted in such a
manner that the hydrocarbons do not reach pyrolysis temperature and are
10 only partially decomposed to form polycyclic aromatic hydrocarbons
(PAHs),
- that the hydrocarbons in the form of PAHs are, after the first
decomposition step, mixed with a plasma gas and reintroduced as a part of a
plasma gas into a plasma arc zone in a decomposition chamber and subjected
15 to a second decomposition step, where the intense heat in the plasma arc zone
causes the PAHs to be converted into the micro-domain graphitic materials.
2. A media according to claim 1,
characterised in that the micro-domain graphitic materials consists
of at least one of the materials chosen from the group comprising carbon
20 nanotubes, fullerenes, carbon micro-cones, and flat graphitic carbon sheets.
3. A media according to claim 2,
characterised in that the domain size is smaller than 5 μm in
diameter or length parallel to the graphitic stacking direction and having a
thickness of less than 100 nm in the graphitic stacking direction.
- 25 4. A media according to claim 1 - 3,
characterised in that the media contains micro-domain graphitic
materials in the range from 0 to above 90wt%.
5. A media according to claim 4,
characterised in that the media contains more than 90wt% micro-
30 domain graphitic materials.

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6. A media according to any one of claims 1-5,
characterised in that the media results from dehydrogenation of
heavy fuel oil into micro-domain graphitic materials.

5 7. A carbon media for storage of hydrogen comprising micro-domain
graphitic materials,
characterised in that it contains open carbon micro-cones with total
disclination degrees 60° and/or 120° , corresponding to cone angles of
respectively 112.9° and/or 83.6° .

8. A carbon media for storage of hydrogen,
10 characterised in that it comprises a micro-domain material which
have been produced by decomposition of hydrocarbons in a reaction chamber
connected to a plasma generator in which the intense heat in the generator
causes the hydrocarbons to be converted into the micro-domain material.

9. A media according to claim 8,
15 characterised in that the micro-domain material comprises
amorphous carbon such as conventional carbon black.

10. A media for storage of hydrogen,
20 characterised in that the micro-domain material comprises a
mixture of the graphitic micro-domain materials given claims 1-7 micro-
domain materials given in claims 8-9.

11. Use of the carbon media as given in claims 1-10 for storage of hydrogen.

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